POPULATIONS OF MRS. GOULD'S SUNBIRD,

with Comments on Ranges and Variation among Related Species of Sunbirds

by

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Mrs. Gould's Sunbird, *Aethopyga gouldiae,* is one of the most beautiful of that brilliant tribe. The typical *gouldiae* of the Himalayas has a metallic purplish-iridescent crown reaching back to the nape, metallic patches on the posterior ear coverts, throat, and a patch high up on the side of the jugulum. The back and wing coverts are rich red, the rump yellow, while the upper tail coverts and the two central tail feathers for more than half their length are a metallic bluish color.

Below, typical *gouldiae* has a metallic iridescent throat and a bright lemon-yellow breast which shades to dull olive-yellow on the lower abdomen and under tail coverts. The sides of the breast are flecked with occasional red feathers, while the center of the breast may or may not, varying in different individuals, have a few flame-red edgings to the yellow feathers.

Dabry's Sunbird, *Aethopyga gouldiae dabryii*, described from Tatsienlu in western Szechuan, was for long thought a separate species. In coloration, however, the sole difference between *dabryii* and *gouldiae* is in the underparts. The tendency to flame-red edgings on the breast feathers seen in *gouldiae* has been intensified so that the whole breast is flame-red with the feathers fading from flame-red to yellow halfway toward the base, but individual feathers may be edged with yellow. Yellow is more extensive in this form also, extending throughout the lower surface, replacing the olive-yellow of the vent and under tail coverts of *goldiae.*

A third color variant is the subspecies *annamensis* of southern Laos and Annam in Indo-China. In this form the underparts are entirely yellow, and the rump is yellowish-olive instead of yellow. These seem, lacking any recognizable size variations, to be the only differences and form an interesting example of strictly discontinuous variation of alternative characters. These characters might be expressed as follows:—

Y = yellow breast	U = olive under tail coverts	R = yellow rump
y = red breast	u = yellow under tail coverts	r = olive rump

Using a combination of these characters as symbols, the subspecies can be listed as follows:—

Aethopyga gouldiae	*gouldiae*	= YUR
,,	*dabryii*	= yuR
,,	*annamensis*	= Yur

Thus two characters vary independently in each of these three populations.

The Southern Assam Population

In a paper on the birds collected by my wife and myself in the Naga Hills (1952), I discussed these little sunbirds in the eastern

Naga Hills near the Burma border, and came to the conclusion that one of the immature males we collected was a hybrid between *gouldiae* and *dabryii*. I resurrected the name *isolata* Baker for what seemed to be a hybrid population based on this specimen and on Stuart Baker's reference to red-chested birds seen in North Cachar (1926). In order to re-examine this situation I have borrowed a total of 81 male specimens of this species in addition to material in the Peabody Museum. I am most grateful to the authorities of the British Museum, the Harvard Museum of Comparative Zoology, the American Museum of Natural History and the U.S. National Museum for the loan of these specimens.

Besides my immature bird from the eastern Naga Hills, there are two puzzling references in the literature to the distribution of the species in southern Assam. One is Hume's account in the Birds of Manipur (1888). The author reports a sight record of the flame-red breasted *dabryii* at the top of Hendang Peak in the eastern hills near the Burma border. The description is accurate and detailed, and I am inclined to credit it, although it is only a sight record. Nearby at Aimole and Machi, Hume collected typical *gouldiae*. Unfortunately he does not record the time of year.

The second reference is in Baker (op. cit.). In this he states that he collected females of *dabryii* in north Cachar on the nest. Males were seen but not collected which, *vide* Baker, had 'far deeper flame-red breasts than the ordinary *g. gouldiae*.' Unfortunately the females are in the Museum at Sophia and I have not examined them. However, on reconsideration of this statement of Baker's (which inclined me previously to believe that the *dabryii* phenotype might thus be cropping up occasionally in this area), I am inclined to doubt his record. Baker described *isolata* (1925), the population from southern Assam south of the Brahmaputra River, as having a pure yellow breast without the occasional red edgings found in typical *gouldiae*. He relates that on Mount Victoria, the yellow-breasted *isolata* occurs at 5,000 ft., while at 6,000 ft. all the birds were 'red-breasted'. As Stresemann (1940) has shown, nothing but *gouldiae*-type birds occur on Mount Victoria, and I believe that Smythies's (1940) listing of *dabryii* from Mount Victoria is simply a direct quotation from Baker (op. cit.). The presence or absence of red edgings to the breast feathers is individual and not a racial character. I have examined heavily red-edged birds from south of the Brahmaputra, and certainly on the basis of this supposed character, *isolata* could never stand. Furthermore, Hume (op. cit.) notes that *dabryii* has a yellow abdomen below the red breast and presumably this includes his sight record. As this added difference in the two forms seems to have escaped Baker entirely (op. cit.), I am inclined to accept Hume's sight record, and to reject Baker's. The females are unlikely to prove to be diagnostic as there is considerable variation in the whiteness of the tips of the tail feathers among the various populations.

Among our series from the eastern Naga Hills was one subadult male which had a patch of red feathers growing in on the breast in an asymmetrical manner. This specimen was taken along the trail which runs east from Kohima towards the Chindwin and Burma. The spot was 75 miles east by the trail, while 2 miles short, near the 73-mile mark we had collected adults of typical *gouldiae*. It did not seem at the time that we could actually have come to the borderline

between two subspecies. No geographical or ecological barrier exists at this point in these uniformly tumbled, scrub-covered hills. However, subsequent study has convinced me that these specimens do mark two distinct subspecies and that this is their boundary zone, unless the *dabryii* record is simply a winter visitor.

Immature Plumages

Some description of the immature, male plumages examined may be of interest here. I agree with Deignan (1945) that there is no indication of an eclipse plumage in this species. This point is worth noting as the suggestion had been made by Delacour and Greenway (1940) that perhaps the species *gouldiae* has an eclipse plumage as has *ignicauda*.

(1) The earliest taken subadult male I have examined is a male of typical *gouldiae* collected in October at Mussoorie, U.P. This bird has one all-red feather on the upper right side of the mantle, one or two on the sides of the breast and suffusion of rich orange-yellow coming in on the sides of the rump and belly. One of the central tail feathers has a metallic iridescent edging as have several of the upper tail coverts.

(2) Another subadult of December 2, from the Naga Hills, has two metallic feathers on the crown and several on the throat, with numerous red feathers on the mantle and upper wing coverts. The tail and upper tail coverts seem to be complete as in the adult. The breast is pure yellow.

(3) The immature previously referred to from 75 miles east of Kohima collected December 3, 1952, which I now believe to represent the first collected record of *dabryii* from Assam, has one metallic feather on the crown and numerous red feathers on the sides of the mantle and on the greater and lesser wing coverts. The rump is rich yellow. The metallic upper tail coverts are present, but the tail is still dull colored and white tipped as in the female plumage. The breast and abdomen are yellow with irregular splashes of red. The lower abdomen and under tail coverts are yellowish-olive as in the female.

(4) A January subadult of *dabryii* from Mount Muleyit in Tenasserim has the crown still gray but edged with metallic feathers, the mantle red except the nape. The tail feathers are short. The throat is gray with a median metallic streak and patches on the sides. The ear coverts are black. The breast is already completely red.

(5) A young male *dabryii* from Thailand taken in March has a gray crown and nape. The median streak of metallic feathers on the throat is broad and heavy. The breast is red. The posterior ear coverts are commencing to have metallic feathers.

(6) A bird from Mount Angka in Thailand which has been sexed as a '♀?' taken in March, has a sprinkling of red *edgings* to the feathers of rich olive colored crown. There are similarly red-edged feathers on the mantle and one or two on the throat. There are no traces of metallic feathers. It seems entirely possible that this specimen (M.C.Z., No. 197013) is in fact an old female which is assuming partial male plumage.

From the above evidence it would appear that young males of the year in this species assume nuptial plumage gradually and somewhat irregularly over a period of at least seven and possibly ten months.

The Name of the Southern Assam Population

I have compared 16 adult males of *gouldiae* from south of the Brahmaputra River with 17 adult males from the Himalayas, and am convinced that Baker's name, *isolata,* must be upheld. This population does not differ from nominate *gouldiae* in color as Stresemann (op. cit.) has already noted. In general it may be said that there is a tendency to a purer lemon yellow coloring on the breast, less often flecked with red edgings, but individuals may be heavily flecked. However, in size, this population is definitely smaller, as follows:—

		Wing range in mm.	Mean	σ
g. gouldiae	16 ♂♂	53·5–58	56·06	± 1·38
g. isolata	17 ♂♂	50–56·5	53·43	± 1·88

When tested by the formula of t for small samples, it is found that the difference between the means is significant ($P > .001$).

Therefore, I believe that the name, *isolata,* should stand for this population, and that I was mistaken in ascribing this name to a hybrid complex. However, in its range, this form apparently comes into direct contact with *dabryii* in the eastern Naga Hills, and possibly in eastern Manipur.

Range of the Species

I would accordingly list the following forms of *Aethopyga gouldiae*:

(*a*) *gouldiae.* Range: India in the western Himalayas (Sutlej Valley, *vide* Baker) up to 12,000 ft. in the deciduous and coniferous zone and to the hills north of the Brahmaputra River. Forested areas of south-east Tibet, apparently migrating south in the depths of winter.

(*b*) *isolata.* Range: Assam south of the Brahmaputra in north Cachar, the Naga Hills at least as far east as Meluri, 73 miles east of Kohima (by trail), Manipur in the hills as far east as Aimole and Machi, south through the Lushai Hills and Tripura to East Pakistan in the Tipperah and Chittagong Hills. Burma in the Chin Hills (Mount Victoria) and south to the Arakan Yomas. An inhabitant of scrub and deciduous forest up to about 7,500 ft.

(*c*) *dabryii.* Range: Assam in extreme eastern Naga Hills (specimen taken 75 miles east of Kohima by trail), and eastern Manipur (sight record?). Both of these records may, of course, be winter visitors. Burma (except in the Chin Hills and Arakan Yomas), from the Chindwin and north Burma south through the Shan States to Tenasserim, Thailand, northern Indo-China in Laos and Tonkin, and China in Yunnan, Szechuan and western Hupeh. Deignan (op. cit.) maintains that all Thailand records are for wintering birds taken between November 4th and March 18th and further asserts (1944) that records for Indo-China presumably refer to winter visitors. The species is not known to breed in Burma, but has been taken as late as April in

the north-west. It is found in deciduous and coniferous forest up to at least 11,000 ft. I agree with Deignan that *bangsi* and *harrietae* are synonyms.

(*d*) *annamensis*. Range: southern Laos and Annam in the Langbian and Bolovens areas in southern Indo-China.

Seasonal Wandering

During November-December in the Naga Hills at 4,000-5,000 ft., we found four species of *Aethopyga* in the same flowering trees in open scrub. These were *saturata, siparaja, nipalensis,* and *gouldiae*. A fifth species, *ignicauda,* was taken at this altitude and near by, but only in open pasture land. There is a considerable amount of indicated overlap between these species and the problem of potential competition between them still needs to be worked out. A partial indication of their ranges may be given as follows:—

Winter

open scrub and pasture land ——→ evergreen forest

	1–3*	3–4	4–4·5	4·5–5	5–8	8+
nipalensis				×	×	×
saturata		×	×	×		
siparaja	×	×	×	×		
ignicauda				×	×	×
gouldiae			×	×	?	

Summer

Scrub jungle ——→ evergreen forest ——→ deciduous and coniferous

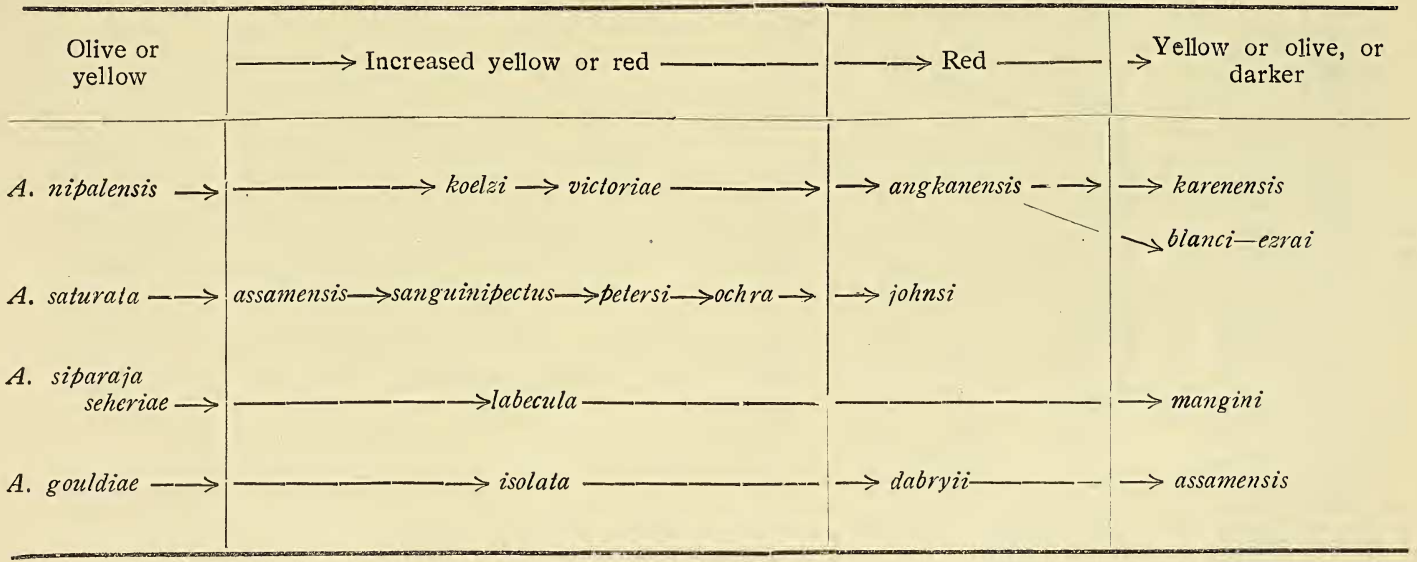
	1–3	3–4·5	4·5–5	5–7·5	7·5–8	8+	10+
nipalensis ...				× (Assam)	×	×	
saturata ...		×	×	×			
siparaja ...	×	×	×	× (Yunnan)			
ignicauda ...				×	×	×	×
gouldiae ...					×	×	×

Geographical Variation among Sunbird Species

It is perhaps worth pointing out that some of these species of sunbirds seem to vary in a parallel way, breaking up into subspecies from west to east through a common geographical range. Ticehurst (1938) has noted the remarkable similarity of variation in two virtually similar species of Laughing-thrush in this same general area. In these sunbirds, the species are in no sense sibling species, although they are obviously all related fairly closely to each other. Nor are the divisions into geographical races in any sense exact. However, there is an interesting parallelism in the pigment change among them as follows:—

* (thousands of feet altitude.)

Indian Subregion, Assam through Indochinese Subregion, west to east



Summary

Aethopyga gouldiae has four recognizable subspecies distributed from the Himalayas through the Indochinese Subregion. One subspecies, *isolata*, is recognizable on size measurements. Another, *dabryii*, must now be included within the fauna of the Indian Union. Some comments on ranges and color variations among *gouldiae* and related species are also included.

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